



Bureau of Safety and Environmental Enforcement

# Subsea Intervention

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“To promote safety, protect the environment and conserve resources offshore through vigorous regulatory oversight and enforcement.”

# BSEE Mission Statement

“To promote safety, protect the environment and conserve resources offshore through vigorous regulatory oversight and enforcement.”

# Overview

## Subsea Well Intervention

- Types of Subsea Well Intervention Units performing decommissioning in the deepwater environment.
- BSEE's requirements when utilizing a Subsea Intervention Unit to perform wellwork.
- Changes to review in light of the New Rule

# Subsea Well Intervention

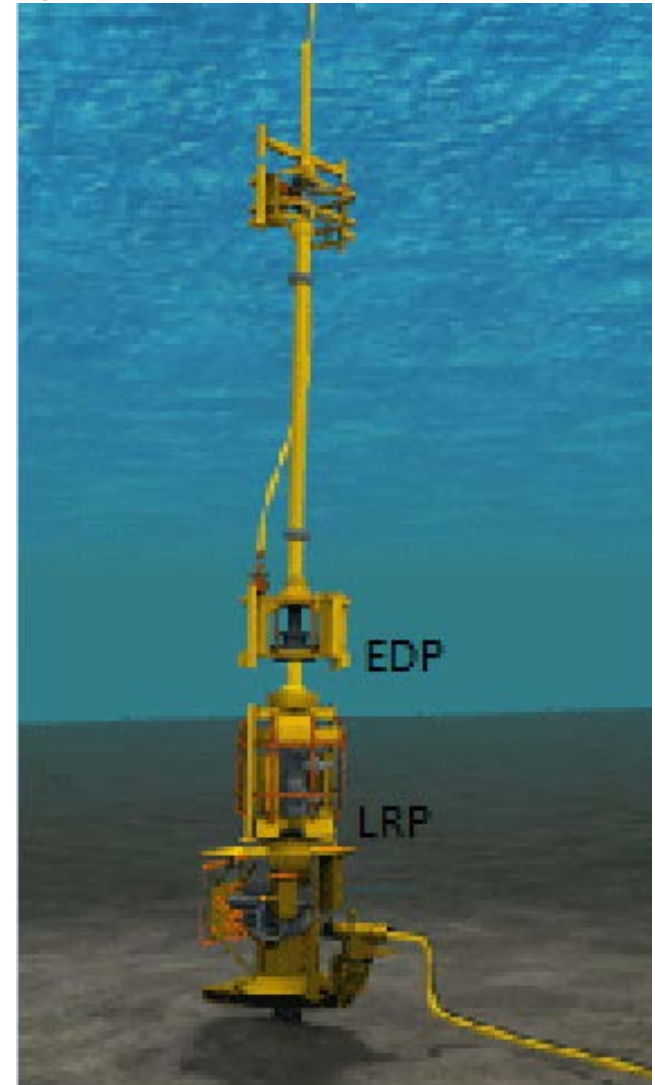
## Types

- Intervention Riser System (IRS)
- Riserless Intervention System
- Open water Subsea Pumping Systems

# Subsea Well Intervention

## Intervention Riser Systems (IRS)

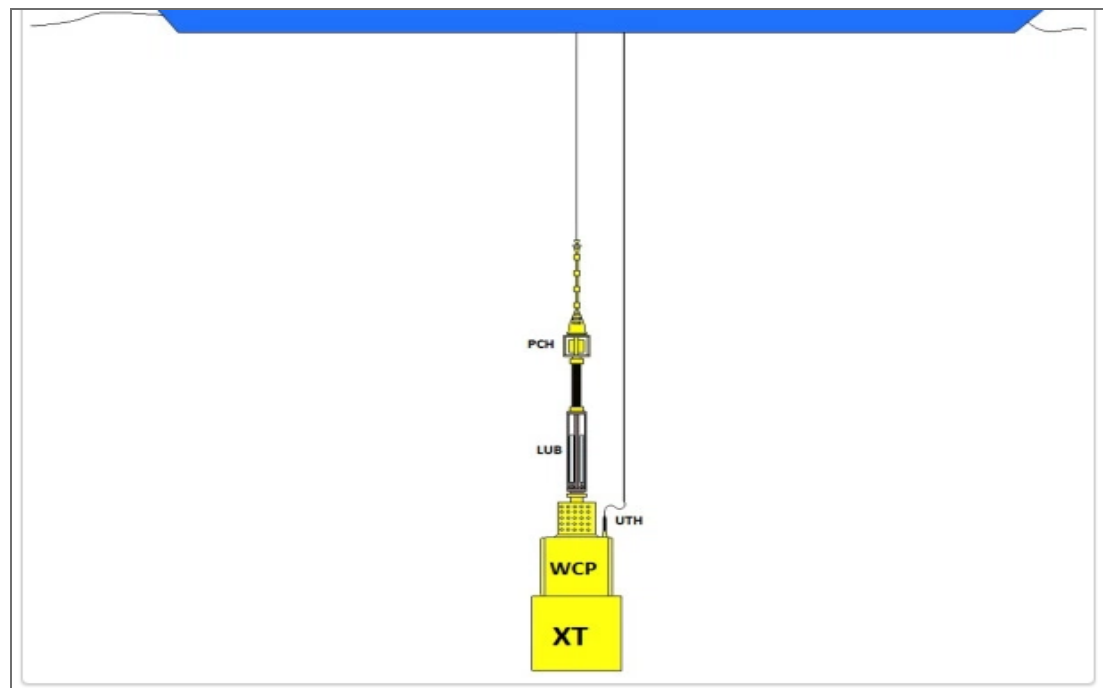
- This type of intervention unit has a surface BOP (coil tubing and/or wireline) with a subsea well control package (WCP) on top of the tree/wellhead connected via a riser.
- The WCP consists of an Emergency Disconnect Package (EDP) and a Lower Riser Package (LRP).
- The EDP/LRP is a system of valves and/or rams that will shear and seal the wellbore in case of a well control issue or drive/drift off of the vessel.



# Subsea Well Intervention

## Riserless Intervention Systems

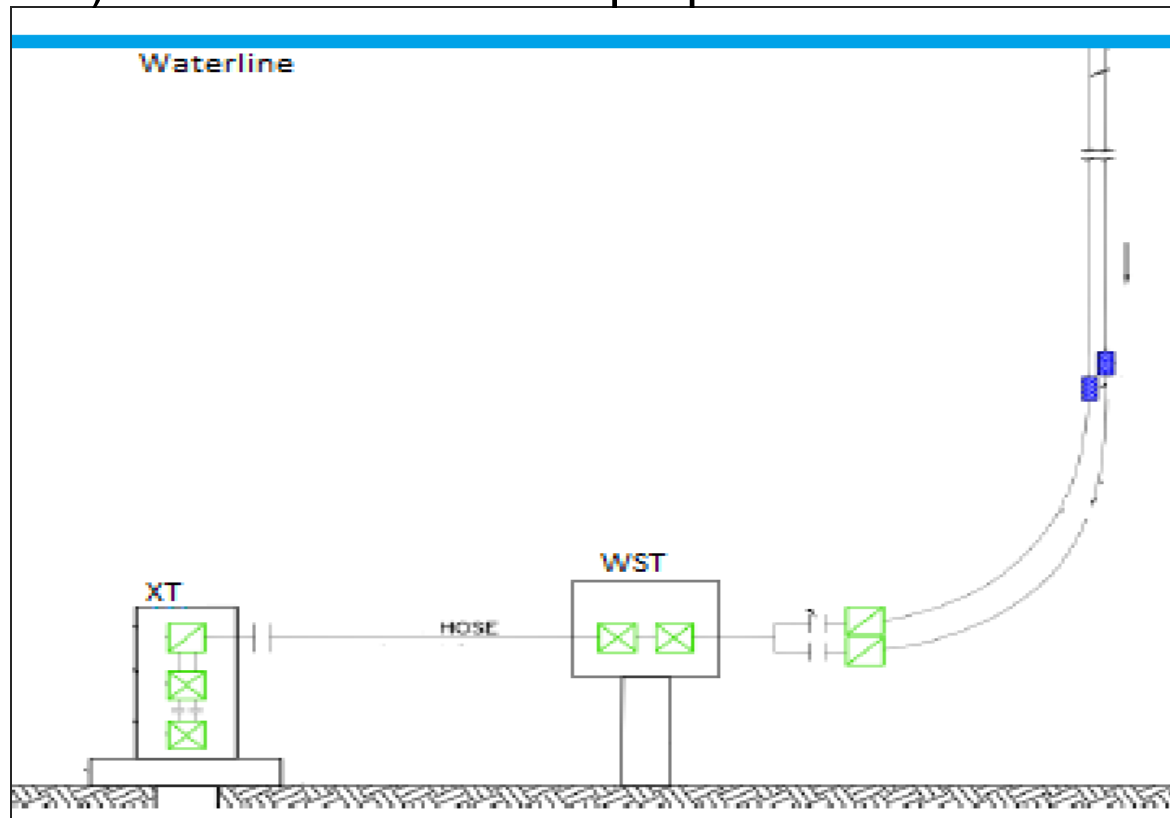
- This type of intervention unit contains a well control package (WCP), wireline lubricator (LUB) and pressure control head (PCH) located on top the subsea tree/wellhead (XT).
- The WCP is a system of valves/rams utilized for well control purposes. The package will shear and seal the wellbore in case of a well control issue or drive/drift off of the vessel.



# Subsea Well Intervention

## Open Water Subsea Pumping Systems

- This type of intervention unit is used for riserless subsea pumping operations. It is connected to the top of the tree/wellhead (XT) or through the choke depending on the tree design.
- The well stimulation tool (WST) is a system of valves (with at least 2 barriers) used for well control purposes.



# Subsea Well Intervention

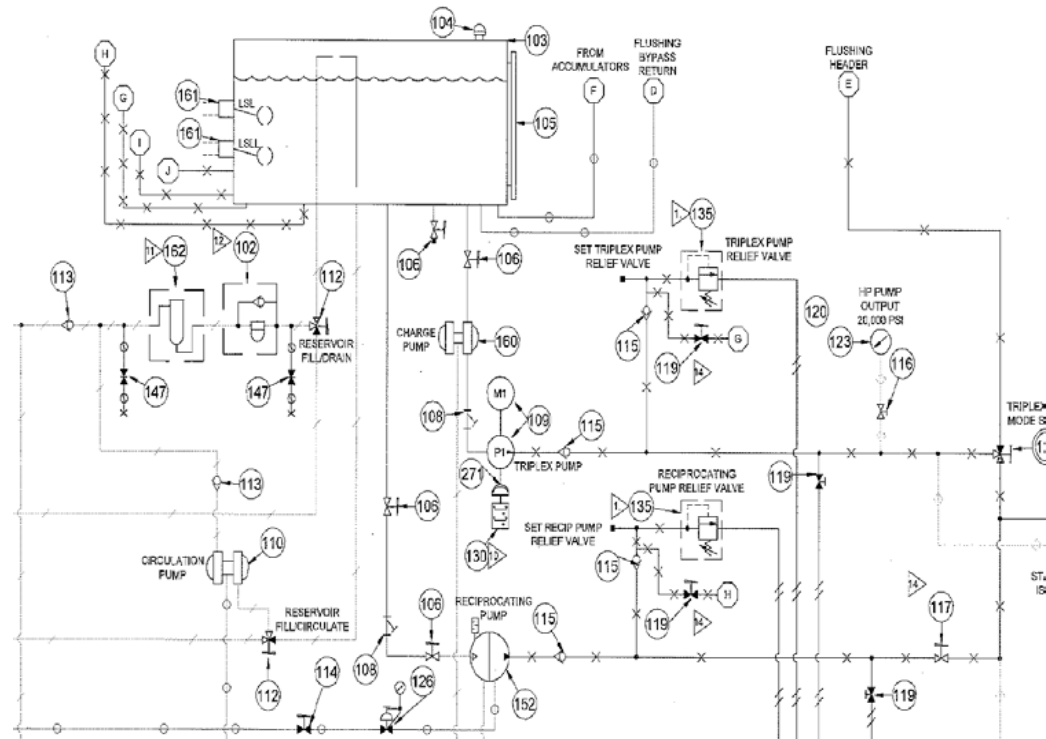
## BSEE Requirements for Subsea Intervention Units

- Subsea Intervention Units are in retrospect considered BOPs per Subpart G
- These units are being reviewed in accordance with the subsea BOP regulations as much as possible.
- The following documentations are currently being requested and reviewed by BSEE:
  - Control System Drawings
  - Stump & Initial On-Bottom Testing Procedures
  - Third Party Shearing Verification
  - Third Party Verification on the Intervention Unit
  - Accumulator calculations, if applicable



# Subsea Well Intervention Control System Drawings

- BSEE is requesting the following drawings:
  - HPU Hydraulic Drawings
  - Intervention Unit Hydraulic Drawings/P&ID
- From these drawings BSEE will review the following:
  - Correctly depict how the intervention system will operate.
  - Deadman/Autoshear System Circuitry
  - Valve Types



# Subsea Well Intervention Required Drawings

- BSEE requires the following on a stack up drawing of the Intervention System:
  - HPU Hydraulic Drawings
  - Inside diameter of the intervention system
  - Location and type of locking devices
  - Size range and sizes of all rams
  - Location and sizes of choke/kill lines
- Riser schematic showing:(if applicable)
  - Number, size and labeling of all control, supply, choke, and kill lines to the intervention system
- Choke Manifold Drawing
  - Showing valves, pipes, flexible steel hoses, and other fittings
  - RWP must be equal to or greater than the RWP of the intervention system

# Subsea Well Intervention

## Third Party Shearing Verification

- BSEE is requesting the following shearing data to be third party verified:
  - Actual shearing data showing that the valves or rams located on the intervention unit can shear an equal or more rigid workstring/wire than what will be across the stack during the operation you intend to perform with subsequent pressure tests. This shearing test must be third party verified.
  - Third party verified theoretical calculations for each size pipe/wire that will be across the intervention stack calculated with a pressure equal or greater than the maximum anticipated surface pressure (MASP) must be submitted.
- This is to show that the valving or shear rams installed are capable of shearing any size workstring/coil/wire across the stack under MASP.
- This is not required for Subsea Pumping Intervention Systems.



# Subsea Well Intervention

## Initial Third Party Verification

- APM Third Part Cert must verify:
  - Test data demonstrates that the shear rams will shear at water depth as required in 250.732
  - Intervention system was designed, tested, and maintained to perform under the maximum environmental and operational conditions anticipated to occur at the well
  - Accumulator system has sufficient fluid to operate the intervention system without assistance from the charging system
- This must be submitted and approved by BSEE before permit approval
- This is not required for Subsea Pumping Intervention Systems.

# Subsea Well Intervention

## Subsequent Third Party Verification

- APM Third Part Cert must verify:
  - Intervention system is designed and suitable for the specific equipment on the rig and for the specific well design.
  - System has not been compromised or damaged from previous service
  - System will operate in the conditions in which is will be used
- This must be submitted and approved by BSEE before any well work can begin.
- This is not required for Subsea Pumping Intervention Systems.

# Subsea Well Intervention

## Stump Test and On-Bottom Procedures

### Stump Test Procedure Requirements

- A full pressure test is required to MASP + 500 at the mudline.
- All ROV hot stab functions must be function tested with visual verification of closure
- Must function test deadman and autoshear (if applicable), and EDS systems.



### Initial On-Bottom Test Requirements

- A full pressure test is required to MASP + 500 at the mudline.
- Must function test and verify closure of at least one set of rams/valves through an ROV hot stab. Verification of closure can be done by a pressure test or a visual indicator.
- Must function test the deadman system and verify closure of at least one set of rams/valve. Verification of closure must be done with a pressure test at MASP + 500 taken at the mudline

# Subsea Well Intervention

## Compliance worksheet

- All intervention units will be vetted through a worksheet which compares the system to relevant Subpart G regulations.
- Any regulation not met must have a requested alternate compliance with reasonable explanation

	A	B	C	D
1	Intervention System Name:			
2	Permitted Well:			
3	Submittal Date:			
4	Evaluated by:			
5		Need wording for eliminating sections of Subpart G due to ops		
6	Regulation number	Regulations/Req	Regulation being met?	Comments/Justifications
7	<b>§250.701</b>	<b>May I use alternate procedures or equipment during operations?</b>		
8		Is an alternate compliance being requested?	Yes	This entire unit is an alternate compliance to the regulations. See responses below identifying and discussing the alternate compliance
9	<b>§250.702</b>	<b>May I obtain departures from these requirements?</b>		
10		Is a departure being requested pertaining to this well intervention unit?		There may be a departure request on the unit
11	<b>§250.712</b>	<b>What rig unit movements must I report?</b>		
12	712(a)	You must report the movement of all rig units on and off locations to the District Manager using Form BSEE 0144, Rig Movement Notification Report. Rig units include MODUs, platform rigs, snubbing units, wire-line units used for non-routine operations, and coiled tubing units. You must inform the District Manager 24 hours before:	N/A	COA
13	712(a)(1)	The arrival of a rig unit on location;	N/A	COA

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